PART I - ADMINISTRATIVE

Section 1. General administrative information

Title of project

Grand Ronde River Basin Umbrella

BPA project number: 20512
Contract renewal date (mm/yyyy): ☐ **Multiple actions?**

Business name of agency, institution or organization requesting funding
Oregon Department of Fish and Wildlife

Business acronym (if appropriate) ODFW

Proposal contact person or principal investigator:

Name	Tony Nigro And Susan Barnes
Mailing Address	2501 SW First Avenue
City, ST Zip	Portland, Or. 97207
Phone	(503) 872-5252
Fax	(503) 872-5632
Email address	Tony.Nigro@state.or.us

NPPC Program Measure Number(s) which this project addresses
2.1, 7.1b, 7.1c, 7.1d, 7.2, 7.2d, 7.3b, 7.4a, 7.4d, 7.4l, 7.6a.2, 7.6b, 7.7, 7.8d, 7.8e, 7.10, 10.5

FWS/NMFS Biological Opinion Number(s) which this project addresses
NA

Other planning document references
Grande Ronde River Subbasin Salmon and Steelhead Production Plan, Draft Snake River Salmon Recovery Plan, Lower Snake River Fish and Wildlife Compensation Plan Special Report,Upper Grande Ronde River Anadromous fish Habitat Restoration and Monitoring Plan, NWPPC Strategies for salmon, Volume VII, Oregon Trust Agreement Planning project, Assessing OTAP Project Using GAP Analysis.

Short description
The management intent for GRR basin involves protecting and enhancing fish and wildlife species, their habitats and watershed health to ensure their persistence. The objectives and strategies to achieve this goal are described in this umbrella proposal.

Target species
Spring and full chinook salmon, summer steelhead, bull trout and other native fish species, native wildlife species, including habitat indicator species.

Section 2. Sorting and evaluation

Subbasin
Grande Ronde River Basin

Evaluation Process Sort

CBFWA caucus	Special evaluation process	ISRP project type
Mark one or more caucus	If your project fits either of these processes, mark one or both	Mark one or more categories
☒ Anadromous fish ☒ Resident fish ☒ Wildlife	☒ Multi-year (milestone-based evaluation) ☐ Watershed project evaluation	☒ Watershed councils/model watersheds ☒ Information dissemination ☒ Operation & maintenance ☒ New construction ☒ Research & monitoring ☒ Implementation & management ☒ Wildlife habitat acquisitions

Section 3. Relationships to other Bonneville projects

Umbrella / sub-proposal relationships. List umbrella project first.

Project #	Project title/description
20512	Grande Ronde River Subbasin Umbrella
9202604	Salmonid Life History Study
9405400	Bull trout
8805305	NEOH Master Plan and Facilities
9801001	Captive Brood Stock Program
8402500	Protect and Enhance Fish Habitat
9608000	Northeast Oregon Wildlife Mitigation O&M Truct Fund
9705905	Securing Wildlife Mititgation Sites in Oregon Ladd Marsh WMA Additions
9705912	Securing Wildlife Mititgation Sites in Oregon Wenaha WMA Additions

Other dependent or critically-related projects

Project #	Project title/description	Nature of relationship
9600800	PATH	Analysis to assess status and health of populations.
8805301	NEOH Master Plan / Nez Perce Tribe	Planning process to develop additional hatchery facilities in the subbasin.
9800702	Grande Ronde Supplementation / Nez Perce Tribe	Hatchery enhancement for Lostine River s[romg chinook.
9800703	GR Spring Chinook Salmon Satellite Facility Operation & Management / CTUIR	Operates facilities to acclimate progeny of captive brood & conventional components in CCr & upper GRR. Participates in monitoring adult escapement & juvenile production in the GRR. Participates in M&E of (1) of hatchery supplementation program.
9801006	Captive Broodstock Art. Propagation / Nez Perce Tribe	Assists in ODFW with M&E of captive broodstock program.
9202601	Grande Ronde Model Watershed Planning	Oversee and implement habitat restoration in the subbasin.
9402700	Grande Ronde Model Watershed Habitat	Oversee and implement habitat restoration in the subbasin.
8909600	Genetics Monitoring of Snake River Salmon and Steelhead / NMFS	Understanding the genetics crucial for monitoring success of Snake River hatchery supplementation efforts. Monitoring the

		genetic diversity of local populations. ODFW will increase efficiencies by collecting samples during other field activities
9606700	Captive Brood Stock Program Manchester Marine Lab / NMFS	Rears captive fish for the Grande Ronde Captive broodstock program.
0	Securing Wildlife Mititgation Sites in Oregon Umbrella	Regionwide umbrella proposal for wildlife mitigation projects.

Section 4. Objectives, tasks and schedules

Past accomplishments

Year	Accomplishment	Met biological objectives?
1986	Restored recreational fishery for summer steelhead.	Yes.
1993	Identified potential mitigation oportunities by priority (OTAP Project).	Yes.
1995	Initiated spring chinook captive broodstock program.	Yes.
1996	Completed genetics characterization of chinook salmon populations.	Yes.
1997	Initiated conventional supplementation program in Catherine Creek, upper Grande Ronde and Lostine Rivers.	Yes.
1997	Completed ecosystem diagnosis and treatment as a watershed assessment tool.	Yes.
1997	Created series of databases and GOA layers to assist in the evaluation of potential wildlife mitigation projects (GAP analysis Project).	Yes.
1998	Identified life history patterns and critical habitat for spring chinook salmon in the upper Grande Ronde subbasin.	Yes.
1998	Collected embryos from the first ripe 1994 captive broodstock females.	Yes.
1998	Resolution of co-management of Grande Ronde stocks using hatchery supplementation programs.	Yes.
1998	Completed screening most diversions in the Grande Ronde subbasin.	Yes.
1998	Continued implementation of habitat enhancement.	Yes.
1998	Elimination of non-endemic broodstock at Lookingglass Hatchery.	Yes.
1998	Identified two potential mitigation projects in the two subbasins that would meet wildlife mitigation objectives.	Yes.

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Utilize hatcheries to assist in recovery efforts of threatened spring chinook	a	Implement captive broodstock programs including research, monitoring, evaluation,

	salmon and summer steelhead.		and fish health monitoring for spring chinook populations in Catherine Creek, upper Grande Ronde, and Lostine Rivers.
1		b	Develop and utilize endemic broodstocks for supplementation of spring chinook salmon in the Grande Ronde Basin.
1		c	Continue planning for anadromous salmonid enhancement programs with co-managers.
2	Develop an understanding of the biology of local spring chinook salmon and summer steelhead populations to allow for effective management and recovery of depressed populations.	a	Implement research to understand life history strategies and critical habitat utilized by populations of spring chinook salmon and summer steelhead in Grande Ronde River basin including strategies that affect survival, habitat use and reproduction.
2		b	Investigate biology of spring chinook salmon and summer steelhead at the local population level to lucidate differences important for proper management and to ensure management actions are effective for all populations within Grande Ronde basin.
3	Develop an understanding of bull trout population biology to allow for effective management and recovery of depressed populations.	a	Implement research to investigate the distribution, abundance, genetics, and life history patterns exhibited by bull trout in the Grande Ronde River Basin.
3		b	Evaluate the interactions between bull trout and brook trout, including extent of hybridization, feeding overlap and assess risk imposed on bull trout by similar introduced species.
4	Restore and improve watershed health to provide habitat for all life stages and life histories of spring chiook salmon, summer steelhead, and bull trout.	a	Restore riparian vegetation, species diversity, and community structure to perpetuate ecological and physical processes.
4		b	Improve instream habitat diversity and streambank stability.
4		c	Maintain and evaluate existing habitat projects to ensure expected benefit to salmonids are achieved.
4		d	Promote habitat enhancement activities within Grande Ronde River basin.
4		e	Construct, operate, and maintain irrigation diversion screens to protect fishes.
4		f	Inform the general public as well as resource users of the value and importance of watershed health.
5	Monitor salmonid populations to ensure recovery and persistence within the basin.	a	Use juvenile traps to monitor annual smolt abundance and survival to mainstem dams.
5		b	Conduct parr abundance surveys in selected streams.
5		c	Monitor annual adult escapement for spring chinook salmon, summer steelhead, and bull trout using spawning ground surveys, as well as adult weirs on selected streams.

5		d	Generate survival by life stage to estimate for naturally reproduced populations in selected streams.
5		e	Look for and evaluate changes in naturally reproducing populations as supplementation strategies progress and fish are outplanted into local streams.
5		f	Use adaptive management to ensure that supplementation strategies enhance but do not negatively impact natural populations and allow for persistence of local populations.
6	Recover and manage stocks of spring chinook salmon and summer steelhead to provide for recreational and tribal fishery opportunities.	a	Use endemic broodstock based supplementation to enhance adult returns to the basin.
6		b	Use captive broodstock supplementation to enhance adult returns to the basin.
6		c	Monitor adult escapement of spring chinook salmon, summer steelhead, and adult production of bull trout.
6		d	Reopen spring chinook salmon and bull trout fisheries when populations have recovered to a sustainable level.
6		e	Operate hatchery summer steelhead fisheries to minimize impacts on naturally produced populations within the basin.
7	Mitigate for wildlife losses resulting from construction and operation of hydroelectric facilities.	e	Coordinate and implement securing wildlife mitigation sites in Oregon through the development of wildlife mitigation strategies, land acquisition and easement, enhancement planning, and monitoring and evaluation plan development.

Objective schedules and costs

Obj #	Start date mm/yyyy	End date mm/yyyy	Measureable biological objective(s)	Milestone	FY2000 Cost %
			NA		
				Total	0.00%

Schedule constraints
Not Applicable (NA)

Completion date
NA

Section 5. Budget

FY99 project budget (BPA obligated):

FY2000 budget by line item

Item	Note	% of total	FY2000
Personnel	NA	%0	
Fringe benefits		%0	
Supplies, materials, non-expendable property		%0	
Operations & maintenance		%0	
Capital acquisitions or improvements (e.g. land, buildings, major equip.)		%0	
NEPA costs		%0	
Construction-related support		%0	
PIT tags	# of tags:	%0	
Travel		%0	
Indirect costs		%0	
Subcontractor		%0	
Other		%0	
TOTAL BPA FY2000 BUDGET REQUEST			$ 0

Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount ($)
Data was unavailable to do complete cost share analysis. Other projects include USFS, USFWS, EPA, DEQ, OR State lands, ODOT, ODF, OSU, NRCS, USACOE, BOR, BLM, GWEB, NMFS, CTUIR, City and County Govts., ODA, OSP, Environmental Groups and landowners.	A thorough database of watershed projects is available from the GR Model Watershed. BPA funded projects are estimated to be a small proportion of total expenditures for Fish and Wildlife management in the subbbasin.	%0	
		%0	
		%0	
		%0	
Total project cost (including BPA portion)			$ 0

Outyear costs

	FY2001	FY02	FY03	FY04
Total budget				

Section 6. References

Watershed?	Reference
☐	Bedrossian, K.L. et al. 1985. Wildlife and Wildlife Habitat Loss Assessment at Lookout Point Dam and Reservoir Project Middle Fork Willamette River, Oregon. Prepared by ODFW for U.S. Department of Energy, BPA Portland Or, 72 pp.
☐	BPA (Bonneville Power Administration) 1993. Oregon Trust Agreement Planning Project: Potential Mitigation to the Impacts on Oregon Wildlife Resources Associated with Relevant Mainstem Columbia River and Willamette River Hydroelectric Projects. BPA U.S.
☐	Buchanan, D.V., M.L. Hanson and R.M. Hooton. 1997. Status of Oregon's bull trout. Oregon Department of Fish & Wildlife. Portland, OR.
☐	Noyes, J.H. et al. 1985a Wildlife and Wildlife HabitatLoss Assessment at Detroit and Big Cliff Dam and Reservoir Project North Santiam River, Oregon. Prepared by ODFW for U.S. Department of Energy, BPA Portland Or, 76 pp.
☐	Noyes, J.H. et al. 1985a Wildlife and Wildlife HabitatLoss Assessment at Dexter Dam and Reservoir Project Middle Fork Willamette River, Oregon. Prepared by ODFW for U.S. Department of Energy, BPA Portland Or, 63 pp.
☐	NPPC. 1994. Columbia River Basin Fish and Wildlife Program. Portland, OR.
☐	NWPPC (Northwest Power Planning Council). 1994. Strategy for Salmon, Volume VII,
☐	ODFW (Oregon Department of Fish & Wildlife). 1990. Grande Ronde river Subbasin Salmon and Steelhead Prokuctin Plan. Oregon Department of Fish & Wildlife, Portland, OR.
☐	Rieman, B.E. and J.D. McIntyre. 1993. Demographic and habitat requirements for conservation of bull trout. U.S. Forest Service , Ogden, UT.
☐	Snake River Recovery Team. 1993. Draft Snake River salmon recovery plan recommendations. National Marine Fisheries Service, Portland OR.
☐	Spruell, P. and F.W. Allendrof. 1997. Nuclear DNA analysis of Oregon bull trout. Oregon Department of Fish & Wildlife Report 97/5. Portland, Oregon.
☐	USACE (United States Army Corps of Engineers). 1975. Lower Snake River Fish and Wildlife Compensation Plan Special Report. U.S. Army Corps of Engineers, Walla Walla, WA.
☐	USACE (United States Army Corps of Engineers). 1975. Lower Snake River Fish and Wildlife Compensation Plan Special Report. U.S. Army Corps of Engineers, Walla Walla, WA.

PART II - NARRATIVE

Section 7. Abstract

Fish and wildlife management in the Grande Ronde River subbasin is focused on protecting, enhancing, and recovering depressed populations of native species. To accomplish this we need to improve and maintain watershed health. We need to develop a scientific-based understanding of the ecology, life-history, habitat needs, and genetics of local populations. We need to provide adequate habitat for all life stages and to allow the natural production potential of the basin to be achieved. We will utilize hatchery supplementation programs to assist with salmon and steelhead recovery. Once recovery is achieved and populations are sustainable we will look to provide opportunities for tribal and recreational harvest. We will improve and enhance existing wildlife areas to achieve levels of wildlife production that mitigate for losses associated with hydropower. Specific actions to be undertaken include, implementing captive and conventional hatchery supplementation programs, investigate the ecology and population biology of local populations of chinook salmon, steelhead, and bull trout, and protecting and restoring both riparian and instream habitat. In addition, two wildlife areas in the basin will be enlarged through pruchase or easement of additional properties and land management practices will be altered to facilitate habitat restoration. Monitoring and evaluation of fish and wildlife management actions will occur to ensure that the desired level of productivity is achieved and that listed species are in no way jeopardized. The projects covered by this umbrella proposal are listed below.

9202604 Salmonid Life History Study
9405400 Bull Trout
8805305 NEOH Master Plan
9801001 Captive Brood Stock Program
8402500 Protect and Enhance Fish Habitat
9608000 Northeast Oregon Wildlife Mitigation Trust Fund
9705905 Securing Wildlife Mitigation Stes in Oregon/ Ladd Marsh WMA Additions
9705912 Securing Wildlife Mitigation Stes in Oregon/ Wenaha WMA Additions

Section 8. Project description

a. Technical and/or scientific background

The Grande Ronde River subbasin drains an area 4,070 square miles in northeast Oregon (figure 1). Headwaters of the Grande Ronde River originate in the Blue and Wallowa mountains in National Forest lands and flows through forested plateaus and then into the valley floor. The river flows 212 miles from the headwaters in the Blue Mountains to its confluence with the Snake River at RM 168.7. The Wenaha, Minam and Lostine rivers, and Catherine Creek are major tributaries in the subbasin. However, numerous other tributaries are important to salmonid production. The headwaters of the Wallowa, Lostine and Minam Rivers and Catherine Creek originate in the Eagle Cap Wilderness Area in the Wallowa-Whitman National Forest. The Grande Ronde River valley located between the Blue and Wallowa Mountains, covers approximately 360 square miles. The Wallowa River valley is adjacent to the north slope of the Wallowa Mountains and covers approximately 250 square miles. The valley land is privately owned and is used extensively for agricultural production. Two large valleys exist in the subbasin, the Wallowa and Grande Ronde. Gradient of the river is steep in the headwaters and becomes moderate through the valleys. Stream flow patterns in the Grande Ronde are similar to most northeast Oregon streams. Maximum flows typically occur in the spring and minimum flows occur in August or September. Average annual discharge at Troy (RM 45) is 3,107 cfs.

Coho and sockeye salmon are extinct in the subbasin and only a few fall chinook remain. Populations of spring chinook salmon and steelhead in the Grande Ronde subbasin are substantially depressed below estimates of historic levels. For example, it is estimated that prior to the construction of the Columbia and Snake River dams, more than 20,000 adult spring chinook salmon returned to spawn in the Grande Ronde River (ODFW 1990). Spawning escapements of 12,200 salmon and 15,900 summer steelhead were estimated for the Grande Ronde in 1957 and 1963 respectively (USACE 1975). Recent population estimates of both species have been variable year to year, yet remain a degree of magnitude lower than historic estimates (e.g., 248 adult salmon in 1995). In addition to a decline in population abundance, a constriction of spawning distribution is evident in the Grande Ronde subbasin. For example, 21 streams supported spawning chinook salmon historically, yet salmon spawning surveys over the past 12 years, consistently show no activity in eight of those tributary streams. Spring chinook salmon supported recreational and tribal fisheries within the subbasin as well as commercial fisheries in the mainstem Columbia River. Recreational fisheries have been closed since the mid 1970's and Tribal cerimonial and subsistence fisheries have been severly restricted or eliminated.

Precipitous declines in Snake River spring chinook salmon and summer steelhead resulted in these stocks, including the Grande Ronde River stocks, being listed as threatened under the Federal Endangered Species Act (ESA). Numerous factors are thought to contribute to the decline of salmonids in the Snake River and its tributaries. These factors include passage problems and increased mortality of juvenile and adult migrants at mainstem Columbia and Snake River dams, over harvest, and habitat degradation associated with timber, agricultural and developmental practices. More than 80% of anadromous fish habitat in the Upper Grande Ronde River is considered to be degraded (USFS 1992). Habitat problems throughout the Grande Ronde River subbasin (reviewed by Bryson 1993) include poor water quality associated with high sedimentation and poor thermal buffering, moderately to severely degraded habitat,

rearing habitat for juvenile salmonids is thought to be a major factor limiting fish production (ODFW 1990), and a decline in abundance of large pool habitat.

Bull Trout populations also have diminished in size. No historic information is available to document a decreased distribution in the Grande Ronde River subbasin, with the exception of the extirpation of bull trout from Wallowa Lake in the 1950's. It has estimated, however, that greater than 75% of populations in the Grande Ronde subbasin have moderate to high risk of extinction or are probably extinct (Buchanan et al 1999). Bull trout were listed as "threatened" under the Federal ESA in 1998. Bull trout populations have been impacted negatively by over harvest, habitat degradation, and interactions with introduced brook trout (Buchanan et al 1997).

Fish management in the Grande Ronde subbasin is focused on protecting, enhancing, and recovering these salmonid populations. To accomplish this, we need to improve and maintain watershed health. We need to develop a scientific based understanding of the ecology, life history, habitat needs, and genetics of local populations. We need to provide adequate habitat for all life stages and allow natural production potential to be achieved. In addition, we will utilize hatchery supplementation programs to assist with recovery efforts. Ultimately we hope to recover and maintain these populations to allow for persistence within the subbasin and provide tribal and recreational harvest opportunities.

Wildlife habitat types vary within the Grande Ronde River subbasin. A variety of wildlife species, including large and small mammals, waterfowl, passerines, raptors, reptiles, and amphibians, are associated with riverine, riparian, wetland, island, forest, shrub-steppe, and agricultural habitats. The development and operation of hydropower facilities in the Lower Snake River has affected many species in the Grande Ronde River subbasin, primarily through the loss of habitat. Other actions that have impacted wildlife and wildlife habitats in the subbasin include irrigation, agricultural practices, noxious weeds, livestock management practices, human development, forest management practices, and the loss of prey base for some species. Any of these influences can be, and are, limiting factors to local wildlife populations. The goal of wildlife management in the Grande Ronde subbasin is to achieve and sustain levels of habitat and species productivity in order to mitigate for all wildlife and wildlife habitat losses caused by the development and operation of the hydropower system.

b. Rationale and significance to Regional Programs

Management strategies for the Grande Ronde River subbasin incorporate objectives derived from recommendations made by the Columbia Basin Fish and Wildlife program, NMFS Draft Recovery Plan, Tribal Recovery Plan, Columbia River Fisheries Management Plan, as well as other management plans of the Grande Ronde subbasin (ODFW 1990). To help restore and enhance chinook salmon populations, ODFW is pursuing a hatchery supplementation program that involves both a conventional and a captive component. Captive (9801001) and conventional (8805305) broodstock projects for Snake River spring/summer chinook salmon in the Grande Ronde River subbasin are supported by recommendations in the Snake River Recovery Team's report (SRSRT 1994), NMFS draft recovery plan (NMFS, 1995), and the Northwest Power Planning Council's Fish and Wildlife Program (NPPC, 1994). The conventional program utilizes endemic broodstock for Grande Ronde River, Lostine River and Catherine Creek. It addresses measure 7.2 and 7.4L. Measure 7.2 calls for immediate action to prevent extinction and anymore loss of genetic diversity in natural spawning stocks. In addition, measure 7.4L calls for plans for additional supplementation of anadromous salmonids in the Grande Ronde River subbasin. The captive component addresses numerous objectives identified in the 1994 Fish and Wildlife Program including: 7.1B which addresses conservation of genetic diversity; 7.2 which identifies the need for improvement of existing hatchery production; 7.3B which directs implementation of high priority supplementation projects; 7.4A which specifies the need to evaluate and implement new production initiatives; and 7.4D which directs implementation of captive broodstock programs. In addition, the NMFS draft recovery plan states "captive broodstock and supplementation programs should be initiated and/or continued for populations identified as being at imminent risk of extinction, facing severe inbreeding depression, or facing demographic risks". The recovery plan also states "considering the critical low abundance of Grande Ronde spring/summer chinook salmon, impacts to listed fish should be avoided and Lookingglass Hatchery should be operated to

prevent extinction of local populations. Consequently indigenous broodstock should be immediately transferred to Lookingglass Hatchery (natural fish collected in 1995), and production should be maximized to supplement natural populations." Our goal is to help prevent extinction of the three populations and provide a future basis to reverse the decline in stock abundance and ensure a high probability of population persistence.

To facilitate effective management, more information about the biology of the Grande Ronde River salmonid populations are essential. Proposed recovery efforts for the Grande Ronde River, chinook salmon and steelhead stocks require knowledge of stock specific life history strategies and critical habitats for spawning, rearing, and downstream migration (Snake River Recovery Team 1993, Northwest Power Planning Council 1992, Oregon Department of Fish and Wildlife 1990). There is little information available on the early life history and critical rearing habitats in the Grande Ronde River subbasin. Recent calls for information include a description of the spatial differences in spawning and rearing habitat (Snake River Recovery Team 1993), development of a profile on genetic, life history, and morphometric characteristics of wild and naturally spawning populations (Snake River Recovery Team 1993; Northwest Power Planning Council 1992, Oregon Department of Fish and Wildlife 1990), and evaluation of critical habitat needs and factors limiting production (Northwest Power Planning Council 1992, Oregon Department of Fish and Wildlife 1990).

The Salmonid Life History Study (9202604) will provide information as directed under three measures of the Columbia River Basin Fish and Wildlife Program. Measure 7.7 B directs funding for model watershed projects in Idaho, Oregon and Washington and directs the model watershed commission to identify actions that address key limiting factors for salmonids. This study also is relevant to program measures 7.1 C and D. The long term objective of the program is to collect information on sustainability of wild and naturally spawning, salmonid populations. This necessary information includes a description of the genetic, life history and morphological characteristics of wild and naturally spawning populations, identifying population limiting factors and carrying capacity of salmonid habitat. The proposed study will define critical early life history characteristics, provide estimates of juvenile production, and quantify juvenile habitat preference for naturally produced spring chinook salmon and summer steelhead in the upper Grande Ronde system.

Similar population ecology information is needed for effective bull trout management. The Bull Trout Study (9405400) is a direct outcome of Fish and Wildlife program measure 10.5.A-2. Like salmon and steelhead, bull trout stocks have been impacted by hydroelectric development in the mainstem Columbia River, the mainstem Snake River, and the various subbasins. These stocks have been threatened or changed by migration barriers that limit access to spawning and rearing habitats and that may limit the prey base. Hydroelectric dams have also isolated small bull trout populations and prevented genetic exchange among populations. This leads to increased risk of extinction of these populations from genetic factors and random events (Reiman and McIntyre, 1993). Other factors including over harvest, non-native species introductions and habitat loss have also contributed to the decline of bull trout populations. The work of Spruell and Allendorf (1997) suggest that maintaining the genetic diversity of bull trout will require the continued existence of many populations throughout the Columbia Basin. Fishery managers need an increased understanding of limiting factors, movement patterns, habitat needs, and the effects of exotic brook trout and other sympatric species to protect and restore Oregon's bull trout populations.

The Habitat Enhancement Project (8402500) establishes long term riparian, fish habitat and tributary passage improvements on private lands through riparian leases, cooperative agreements and easements of 15 years in length. Individual projects contribute to ecosystem and subbasin wide watershed restoration and management efforts underway by state, federal and tribal agencies. The project provides off-site mitigation for mainstem fisheries losses caused by Bonneville, The Dalles and John Day hydroelectric dams. The project goal is to rehabilitate and improve anadromous fish spawning and rearing habitat as outlined in program measure 7.6 of the FWP (NWPPC 1994). This project is an integral part of meeting biological objectives for spring chinook and summer steelhead in the Grande Ronde Subbasin. Planning for project implementation is coordinated on a comprehensive watershed basis that includes the participation of private landowners, state and federal agencies, tribes and watershed councils as called for in measure 7.6 and 7.7 of the 1994 FWP. Individual projects also incorporate "Best Management

Practices" as outlined in measure 7.8B of the FWP; riparian easements with private landowners as specified in Program Measure 7.8E; and fish passage is established or improved as outlined in measure 7.10 of the FWP. These projects contribute to the Northwest Power Planning Council's interim goal of doubling anadromous fish runs in the Columbia River Basin by providing offsite mitigation for mainstem fisheries losses caused by the eight dams along the Columbia River hydroelectric system. This habitat restoration project is a necessary measures to accomplish natural productions goals as outlined in the Grande Ronde Subbasin Salmon and Steelhead Production Plan. Failure to meet biological objectives in the Grande Ronde Subbasin will impact the Northwest Power Planning Council in realizing its interim goal of doubling anadromous fish runs in the Columbia River basin by providing offsite mitigation for mainstem fisheries losses caused by the dams that constitute the Columbia River hydroelectric system.

The wildlife mitigation in the Grande Ronde River subbasin is a direct outcome of the Northwest Power Planning Council's Fish and Wildlife Program. Actions to enhance habitat on acquired and eased lands will contribute to the FWP goal of achieving and sustaining levels of habitat and species productivity to mitigate for wildlfie losses caused by the developemnt and operation of the hydropower system. Accepted wildlife losses have been measured in Habitat Units for selected target and/or indicator species and are linked to priority habitats. The protection of high quality native habitats and species of concern is called for under Measure 11.2D.1.

c. Relationships to other projects

The management objectives and strategies for the Grande Ronde River subbasin have been and continue to be driven largely from outside programs and actions. As described in detail in project history and relationships to other projects early in the 1980's much of the salmon and steelhead management was linked to mitigation through the Lower Snake River Compensation Plan and NPPC's Fish and Wildlife Program. With the advent of ESA listings came a shift away from mitigation to restoration and recovery of salmonid natural production in the Grande Ronde subbasin. Management actions within the Grande Ronde River subbasin currently emphasize perservation, protection, and enhancement of populations of spring chinook salmon, steelhead, and bull trout and their habitats. Summer steelhead hatchery programs, focused on restoration of fisheries, have been modified to minimize impacts on natural populations. Extensive monitoring and evaluation programs are underway to ensure all actions achieve desired results without deterimental impacts to any of the listed species. In addition, we are in the process of obtaining important scientific information on local populations that will allow us to document realized benefits of management actions in the Grande Ronde River subbasin. Furthermore, much of this life history and population ecology data is being utilized as part of the Columbia basin wide as part of the PATH project.

On a finer scale, there are a number of projects that have relationships with individual projects covered by this umbrella proposal. A list of those projects and a brief description of the relationship follows:

ODFW Projects:

Fish Passage Smolt Monitoring Program - collects data on smolt travel time from Grande Ronde River subbasin to Lower Granite Dam.

Bonneville Hatchery Operations – Operates as a rearing facility for a portion of captive broodstock production.

Mainstem, Middle Fork and North Fork John Day River Project - extensive information exchange, share supplies, technologies and personnel.

Umatilla Habitat Improvement Project - extensive information exchange, share supplies, technologies and personnel with Grande Ronde Habitat Project.

Oregon Screens Project – information exchange and shares expertise and equipment.

Other Related Projects:

LSRCP - Extensive cooperation with captive and conventional supplementation programs. Lookingglass hatchery is a LSRCP facility.

Grande Ronde Model Watershed – Data and information are exchanged and recommendations for habitat projects are provided.

NMFS Manchester Captive Broodstock – Oversees ocean rearing for the captive broodstock program

USFS/IDFG Bull trout Study – Data and information are exchanged

USFS Walla Walla Ranger District – Assist with bull trout spawning surveys and trap maintenance.

Confederated Tribes of the Warm Springs Reservation – Subcontracted to bull trout study for research on reservation lands.

Upper Grande Ronde Habitat Enhancement Project – Cooperative project between CTUIR, ODFW, and others on McCoy Creek and Meadow Creek.

PATH – Provides life cycle and productivity data.

NEOH Master Plan / Nez Perce Tribe – Will provide lon range plan for role of artificial proagation.

Grande Ronde Supplementation / Nez Perce Tribe – Operates collection facility on Lostine River.

Grande Ronde Spring Chinook Salmon Satellite Facility Operation & Management / CTUIR - Operates collection facility for conventional hatchery program.

Captive Broodstock Propagation / Nez Perce Tribe – Cooperative implenemtation of Captive Broodstock Program.

NMFS Genetics of Snake River Salmon and Steelhead – Data exchange and field cooperation.

Captive Brood Stock Program Manchester Marine Lab / NMFS – Saltwater rearing for captive brood hatchery program.

d. Project history (for ongoing projects)

ODFW has been working with co-managers since the 1970's to mitigate for losses of fish and wildlife resulting from construction and operation of mainstem dams. The U.S. Congress authorized the Lower Snake River Fish and Wildlife Compensation Plan (LSRCP) as part of the Water Resources Development Act of 1976. In the Grande Ronde Subbasin, the intent of LSRCP was to use hatcheries to compensate for an estimated 48% loss of chinook salmon and steelhead. In 1980, U.S. Congress passed the Pacific Northwest Electric Power Planning and Conservation Act. This act mandated mitigation for fish and wildlife lost due to mainstem dams and changed the Northwest Power Planning Council with the development of a comprehensive Fish & Wildlife program. Throughout the 1980's, Fish and Wildlife management continued to focus on mitigation. Salmon and steelhead hatcheries were constructed and juvenile production goals developed that would translate into a total adult return of 5,820 spring chinook salmon and 9,184 summer steelhead were developed. The intent was to supply additional adult returns for harvest, hatchery broodstock and to enhance natural production. In addition, in 1984 the Habitat Enhancement project was initiated. By protecting and enhancing spawning and rearing habitat, and improving fish passage, the Habitat Enhancement project goal is to enhance anadromous salmonid production and assist in mitigating mainstem losses. Northeast Oregon Hatcheries Project was initiated in 1987 to contribute to the NPPC's doubling goal for adult returns to the Columbia River Basin.

Grande Ronde salmon and steelhead have continued to decline. In May 1992, the Grande Ronde River spring chinook salmon were listed as threatened under the Federal Endangered Species Act. The decline in steelhead has been some what slower, but in October 1997, the Grande Ronde River summer steelhead also were listed as threatened under ESA. Numerous factors are thought to contribute to the decline of salmon and steelhead in the Grande Ronde subbasin, in addition to problems at mainstem dams.

Over harvest and habitat degradation associated with timber, agriculture, and developmental practices, have impacted local salmonid populations. The potential contribution of these in-basin problems became highlighted as we became aware of declining bull trout populations in the Grande Ronde. Bull trout were listed as threatened under ESA in the summer of 1998.

Current fisheries management for the Grande Ronde River subbasin has shifted from predominantly mitigation to recovery of listed stocks, restoration of riparian and in stream habitat, and improving the health of the Grande Ronde watershed. The Grande Ronde Model Watershed is a local cooperative project that began in 1994 to integrate local habitat efforts with regional actions outlined in the Fish an Wildlife Program and the Snake River Salmon Recovery Plan and is an integral component of fish and wildlife management in the Grande Ronde subbasin. Additional recovery efforts for these populations require basic biology/ecology information to help achieve management that is effective for enhancing natural production of salmon, steelhead and bull trout. The risk of extinction for some local populations of spring chinook salmon is high. Therefore, we also will utilize hatchery technologies, both conventional and captive technologies, to help stave off extinction of salmon in the Grande Ronde subbasin. Up to this point in time, hatchery steelhead programs have been used primarily for fisheries restoration. ODFW will continue to work with co-managers to determine the best means to use steelhead hatcheries in the effort to restore natural populations. In our efforts to adopt the hatchery steelhead program ODFW may propose to develop an endemic broodstock program for summer steelhead.

Wildlife mitigation has no extended history in the Grande Ronde River subbasin. Oregon's wildlife manager's (The Oregon Wildlife Coalition) have been working together since 1991 to coordinate the planning, selection, and implementation of BPA funded wildlife projects under the Fish and Wildlife Program. The coalition developed a coordination and planning budget proposal for FY97. For FY98, the coalition developed and proposed a small group of projects throughout Oregon. This includes Ladd Marsh and Wenaha Wildlife Management Area Mitigation projects. The intent of these projects is to mitigate for losses by enhancing and maintaining these wildlife refuges for all indigenous species.

e. Proposal objectives

Objective 1. Utilize hatcheries to assist in recovery efforts of threatened spring chinook salmon and summer steelhead.

Objective 2. Develop an understanding of the biology of local spring chinook salmon and summer steelhead populations to allow for effective management and recovery of depressed populations.

Objective 3. Develop an understanding of bull trout population biology to allow for effective management and recovery of depressed populations.

Objective 4. Restore and improve watershed health to provide high quality habitat for all life stages of spring chiook salmon, summer steelhead, and bull trout.

Objective 5. Monitor salmonid populations to ensure recovery and persistence within the subbasin.

Objective 6. Recover and manage stocks of spring chinook salmon and summer steelhead to provide for recreational and tribal fishery opportunities.

Objective 7. Mitigate for wildlife losses resulting from construction and operation of hydroelectric facilities.

f. Methods

Objective 1.

Task 1.1. Implement captive broodstock programs including research, monitoring, evaluation and fish health monitoring for spring chinook populations in Catherine Creek, upper Grande Ronde, and Lostine Rivers.

Task 1.2. Develop and utilize endemic broodstocks for supplementation of spring chinook salmon in the Grande Ronde subbasin.

Task 1.3. Continue planning for anadromous salmonid enhancement programs with co-managers.

Objective 2.

Task 2.1. Implement research to understand life history strategies utilized by populations of spring chinook salmon and summer steelhead in Grande Ronde River subbasin including strategies that affect survival, habitat use and reproduction.

Task 2.2. Investigate biology of spring chinook salmon and summer steelhead at the local population level to lucidate differences important for proper management and to ensure management actions are effective for all populations within Grande Ronde subbasin.

Objective 3.

Task 3.1. Implement research to investigate the distribution, abundance, genetics, and life history patterns exhibited by bull trout in the Grande Ronde River Subbasin.

Task 3.2. Evaluate the interactions between bull trout and brook trout, including extent of hybridization, feeding overlap and assess risk imposed on bull trout by similar introduced species.

Objective 4.

Task 4.1. restore riparian vegetation, species diversity and community structure to perpetuate ecological and physical processes.

Task 4.2. Improve instream habitat diversity and streambank stability.

Task 4.3. Maintain and evaluate existing habitat projects to ensure expected benefit to salmonids are achieved.

Task 4.4. Promote habitat enhancement activities within Grande Ronde River subbasin.

Objective 5.

Task 5.1. Use juvenile traps to monitor annual smolt abundance and survival to mainstem dams.

Task 5.2. Conduct parr abundance surveys in selected streams.

Task 5.3. Monitor annual adult escapement for spring chinook salmon, summer steelhead, and bull trout using spawning ground surveys, as well as adult weirs on selected streams.

Task 5.4. Generate survival by life stage to estimate for naturally reproduced populations in selected streams.

Task 5.5. Look for and evaluate changes in naturally reproducing populations as supplementation strategies progress and fish are outplanted into local streams.

Task 5.6. Use adaptive management to ensure that supplementation strategies enhance but do not negatively impact natural populations and allow for persistence of local populations.

Objective 6.

Task 6.1. Use endemic broodstock based supplementation to enhance adult returns to the subbasin.

Task 6.2. Use captive broodstock supplementation to enhance adult returns to the subbasin.

Task 6.3. Monitor adult escapement of spring chinook salmon, summer steelhead, and adult production of bull trout.

Task 6.4. Reopen spring chinook salmon and bull trout fisheries when populations have recovered to a sustainable level.

Task 6.5. Operate hatchery summer steelhead fisheries to minimize impacts on naturally produced populations within the subbasin.

Objective 7.

Task 7.1. Coordinate and implement securing wildlife mitigation sites in Oregon through the development of wildlife mitigation strategies, land acquisition and easement, enhancement planning, and monitoring and evaluation plan development.

Task 7.2 Identify potential protection and enhancement projects within the Grande Ronde River subbasin through the GAP Analysis and coordinate implementation of activities through the Oregon Wildlife Coalition.

Task 7.3 Monitor and evaluate wildlife habitat and species response to implemented enhancement activities.

g. Facilities and equipment

NA

h. Budget

NA

Section 9. Key personnel

NA

Section 10. Information/technology transfer

Information will be transferred through a variety of avenues including:

Research reviews
Reports - monthly, quarterly, annual
ESA annual reports
ESA permits
Technical manuscripts
Technical presentations
Hatchery effectiveness workshops

Public presentations (schools, sportsman and civic groups).

There are multiple decision levels that the information will be used at. At the field biologist level information will be transferred and used by regular communication and contact. At the agency level information will be input into the formal decision process by written communication. Information will be input into the NMFS recovery plan process through written communication and into the CBFWA process by verbal and written communication. The format of feedback will be description of results, recommendations, and formal publication. We have established multiagency management oversight teams for decision making.

Congratulations!